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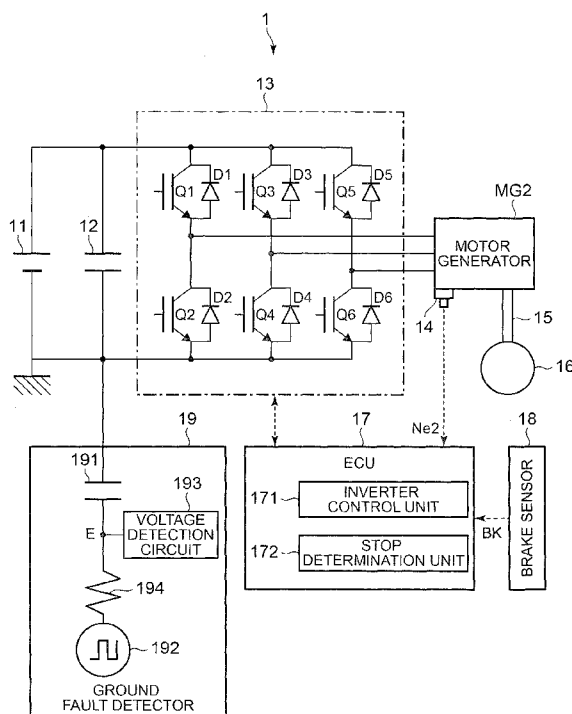
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[Continued on next page]

(54) Title: VEHICLE CONTROL DEVICE

FIG. 1



(57) Abstract: A vehicle control device that controls a vehicle (1) including a first electric motor (MG2) that is driven at a rotation speed (Ne2) synchronized with a rotation speed of a drive shaft (15) of the vehicle includes an electronic control unit (17). The electronic control unit (17) is configured to carry out first determination (172) that determines whether the rotation speed of the first electric motor (MG2) is lower than or equal to a first threshold (N1) and whether a stop operation that stops the vehicle is being carried out, and to carry out second determination (172) that the vehicle (1) is stopped when the electronic control unit (17) has determined in the first determination that the rotation speed of the first electric motor (MG2) is lower than or equal to the first threshold and the stop operation is being carried out.



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INTERNATIONAL SEARCH REPORT

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2006 288051 A (HONDA MOTOR CO LTD) 19 October 2006 (2006-10-19) cited in the application	1,2,7
Y	paragraph [0005] - paragraph [0040]; figures 1,2,3 paragraph [0038]	3-6,8-15
Y	----- US 5 686 839 A (TAKAGI NOBUYOSHI [JP]) 11 November 1997 (1997-11-11) column 002 - column 009; figures 1,5	3-6, 10-15
Y	----- US 2012/062029 A1 (FUKUYAMA TAKAKI [JP] ET AL) 15 March 2012 (2012-03-15) figure 1 ----- -/--	8-15

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7 279 862 B1 (CAWTHORNE W R; CONLON B M; CONRON B M; GAWTHORN W R; HITI S; HITTI S;) 9 October 2007 (2007-10-09) column 001 - column 002; figure 4 -----	6
A	JP 2008 137550 A (HONDA MOTOR CO LTD) 19 June 2008 (2008-06-19) the whole document -----	1-15
A	DE 10 2011 078869 A1 (BOSCH GMBH ROBERT [DE]) 10 January 2013 (2013-01-10) the whole document -----	1,4-6

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2014/001461

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2006288051 A	19-10-2006	JP 4350676 B2	21-10-2009
		JP 2006288051 A	19-10-2006
US 5686839 A	11-11-1997	JP H07241002 A	12-09-1995
		US 5686839 A	11-11-1997
US 2012062029 A1	15-03-2012	CN 102398523 A	04-04-2012
		JP 5174109 B2	03-04-2013
		JP 2012061934 A	29-03-2012
		US 2012062029 A1	15-03-2012
US 7279862 B1	09-10-2007	CN 101188392 A	28-05-2008
		DE 102007036027 A1	20-03-2008
		JP 2008043196 A	21-02-2008
		US RE42200 E1	08-03-2011
		US 7279862 B1	09-10-2007
JP 2008137550 A	19-06-2008	JP 4515439 B2	28-07-2010
		JP 2008137550 A	19-06-2008
DE 102011078869 A1	10-01-2013	CN 103648828 A	19-03-2014
		DE 102011078869 A1	10-01-2013
		EP 2729321 A1	14-05-2014
		KR 20140040206 A	02-04-2014
		US 2014288738 A1	25-09-2014
		WO 2013007418 A1	17-01-2013